

IN THE
United States Court of Appeals for the Federal Circuit

GESTURE TECHNOLOGY PARTNERS, LLC,
Appellant,

v.

APPLE INC., LG ELECTRONICS INC., LG
ELECTRONICS USA, INC., GOOGLE LLC,
Appellees.

On Appeal from the United States Patent and Trademark
Office, Patent Trial and Appeal Board Nos. IPR2021-00922,
IPR2022-00090, IPR2022-00360

**RESPONSE BRIEF OF APPELLEES APPLE
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ELECTRONICS USA, INC., GOOGLE LLC**

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CLAIM LANGUAGE AT ISSUE

U.S. Patent No. 8,553,079

Representative Claims 1 & 3

1. A computer implemented method comprising:

 providing a light source adapted to direct illumination through a work volume above the light source;

 providing a camera oriented to observe a gesture performed in the work volume, the camera being fixed relative to the light source; and

 determining, using the camera, the gesture performed in the work volume and illuminated by the light source.
3. The method according to claim 1 wherein the light source includes a plurality of light emitting diodes.

**UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT****AMENDED CERTIFICATE OF INTEREST****Case Number** 23-1463**Short Case Caption** Gesture Technology Partners, LLC v. Apple Inc.**Filing Party/Entity** Apple Inc.**Instructions:**

1. Complete each section of the form and select none or N/A if appropriate.
2. Please enter only one item per box; attach additional pages as needed, and check the box to indicate such pages are attached.
3. In answering Sections 2 and 3, be specific as to which represented entities the answers apply; lack of specificity may result in non-compliance.
4. Please do not duplicate entries within Section 5.
5. Counsel must file an amended Certificate of Interest within seven days after any information on this form changes. Fed. Cir. R. 47.4(c).

I certify the following information and any attached sheets are accurate and complete to the best of my knowledge.

Date: 10/27/2023Signature: /s/ Jonas Q. WangName: Jonas Q. Wang

1. Represented Entities. Fed. Cir. R. 47.4(a)(1).	2. Real Party in Interest. Fed. Cir. R. 47.4(a)(2).	3. Parent Corporations and Stockholders. Fed. Cir. R. 47.4(a)(3).
Provide the full names of all entities represented by undersigned counsel in this case.	Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities. <input checked="" type="checkbox"/> None/Not Applicable	Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities. <input checked="" type="checkbox"/> None/Not Applicable
Apple Inc.		

☐ Additional pages attached

4. Legal Representatives. List all law firms, partners, and associates that (a) appeared for the entities in the originating court or agency or (b) are expected to appear in this court for the entities. Do not include those who have already entered an appearance in this court. Fed. Cir. R. 47.4(a)(4).

☒ None/Not Applicable ☐ Additional pages attached

5. Related Cases. Other than the originating case(s) for this case, are there related or prior cases that meet the criteria under Fed. Cir. R. 47.5(a)?

☒ Yes (file separate notice; see below) ☐ No ☐ N/A (amicus/movant)

If yes, concurrently file a separate Notice of Related Case Information that complies with Fed. Cir. R. 47.5(b). **Please do not duplicate information.** This separate Notice must only be filed with the first Certificate of Interest or, subsequently, if information changes during the pendency of the appeal. Fed. Cir. R. 47.5(b).

6. Organizational Victims and Bankruptcy Cases. Provide any information required under Fed. R. App. P. 26.1(b) (organizational victims in criminal cases) and 26.1(c) (bankruptcy case debtors and trustees). Fed. Cir. R. 47.4(a)(6).

☒ None/Not Applicable ☐ Additional pages attached

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Date: 10/27/2023Signature: /s/ Stanley J. PanikowskiName: Stanley J. Panikowski

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LG Electronics Inc.		None
LG Electronics USA, Inc.		LG Electronics Inc.

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Gianni Minutoli		
Paul Steadman		

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**UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT**

CERTIFICATE OF INTEREST

Case Numbers 2023-1463

Short Case Caption Gesture Technology Partners, LLC v. Apple Inc.

Filing Party/Entity Google LLC

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I certify the following information and any attached sheets are accurate and complete to the best of my knowledge.

Date: 10/27/2023

Signature: /s/ Daniel C. Cooley

Name: Daniel C. Cooley

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Google LLC		XXVI Holdings Inc.; Alphabet Inc.

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☐

None/Not Applicable

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Additional pages attached

Finnegan, Henderson, Farabow, Garrett & Dunner, LLP:

Mingi Jin

5. Related Cases. Provide the case titles and numbers of any case known to be pending in this court or any other court or agency that will directly affect or be directly affected by this court's decision in the pending appeal. Do not include the originating case number(s) for this case. Fed. Cir. R. 47.4(a)(5). See also Fed. Cir. R. 47.5(b).

☐

None/Not Applicable

☐

Additional pages attached

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Gesture Technology Partners, LLC v. Lenovo Group Ltd. et al.,
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Appeal No. 2023-1501, (CAFC)

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2:21-cv-19234 (DNJ)

Apple Inc. v. Gesture Technology Partners, LLC,
Appeal No. 2023-1494, (CAFC)

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None/Not Applicable

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STATEMENT OF RELATED CASES

No appeal in or from the same proceeding has previously been before this or any other appellate court.

This Court's decision may directly affect or be directly affected by the following cases and proceeding that involve the same patent at issue in this appeal: *Gesture Tech. Partners, LLC v. Apple Inc.*, No. 4:22-cv-04806 (N.D. Cal.); *Gesture Tech. Partners, LLC v. LG Electronics, Inc. et al.*, No. 2:21-cv-19234 (D.N.J.); *Gesture Tech. Partners LLC v. Motorola Mobility LLC*, No. 1:22-cv-03535 (N.D. Ill.); *Gesture Tech. Partners, LLC v. Lenovo Grp. Ltd. et al.*, No. 6:21-cv-00122 (W.D. Tex.); *In re: Gesture Technology Partners, LLC*, No. 24-1037 (Fed. Cir.).

The Court's decision may also directly affect or be directly affected by the following co-pending appeals involving other patents owned by Gesture Technology, which this Court has designated as companion cases to this appeal: *Apple Inc. v. Gesture Tech. Partners LLC*, No. 23-1501 (Fed. Cir.); *Gesture Tech. Partners LLC v. Apple Inc.*, No. 23-1554 (Fed. Cir.).

INTRODUCTION

This appeal presents straightforward questions of claim construction and obviousness, all of which the Patent Trial and Appeal Board correctly decided. Gesture Technology challenges the Board's determination that 27 of the 30 claims of the patent at issue are invalid as obvious. It rehashes arguments the Board rightly rejected, and makes a forfeited claim construction argument that is unsupported by the plain language of the claim.

The technology in this case centers on using a person's gesture, such as a hand movement, to control a computer. Gesture Technology's patent was provisionally filed in 1998 and, following a series of continuation patents, issued in 2013. But well before Gesture Technology filed its provisional application, other innovators were also tackling the well-known problems of touchless control and gesture detection for computers. As relevant here, a team of innovators at Toshiba had already disclosed (and patented) techniques of shining a light on a hand gesture, capturing the light reflected off the hand, and converting that image into data to control a portable computer.

Gesture Technology now disputes the Board’s finding that those patents, coupled with the knowledge of a person of ordinary skill, render the ’079 patent obvious. It does so by drawing purported distinctions from the prior art nowhere found in the claims of its patent. Gesture Technology argues for a construction of “the light source” that it failed to request before the Board, making the argument forfeited, and the argument would have been meritless even if timely. Gesture Technology also argues the prior art did not render obvious using a camera to determine the gesture. But it misreads the prior art, which discloses this very method and device. Gesture Technology’s second claim construction argument, concerning “plurality of light emitting diodes,” fails because it narrowly reads the term to require not that there be more than one LED, but that all lights be illuminated at the same time. The claim language is silent on the timing of the lighting. Gesture Technology’s challenge to the Board’s obviousness finding for these claims flounders on the same basis.

Moreover, Gesture Technology’s assertion that the Patent Office lacks jurisdiction over expired patents is unsupported by this Court’s precedents and the statutory scheme governing inter partes review.

Gesture Technology’s arguments on appeal largely reprise what the Board carefully considered and properly rejected, and what is raised anew is forfeited. This Court should affirm.

STATEMENT OF THE ISSUES

1. Whether the Board correctly construed the term “light source” in independent claims 1, 11, and 21 to have its plain and ordinary meaning, with no added limitation that the light source be on at all times.

2. Whether substantial evidence supports the Board’s determination that independent claims 1, 11, and 21, and dependent claims 2, 4-6, 8-10, 12-14, 16, 18-20, 22, 24-26, and 28-30 of the ’079 patent are unpatentable as obvious in view of prior art disclosing illuminating a hand gesture and controlling a computer based on the gesture.

3. Whether the Board correctly construed “plurality of light emitting diodes” in dependent claims 3, 15, and 23 to have its plain and ordinary meaning, with no added requirement that the lights be on at the same time.

4. Whether substantial evidence supports the Board's determination that dependent claims 3, 15, and 23 of the '079 patent are unpatentable as obvious where the prior art expressly discloses using multiple light emitting diodes.

5. Whether the Patent Office had jurisdiction over the expired '079 patent.

STATEMENT OF THE CASE

Techniques for detecting gestures for controlling computers have existed since the late 1990s.

Since the late 1990s, computer developers have devised techniques for improving upon the “widely used” mouse and keyboard. Appx722 1:15. By the second half of the 1990s, “three-dimensional pointing device[s] for enabling the recognition of natural human gestures” were well known to those in the art. Appx722 1:35-37. Yet such devices were marked by limitations, including that one existing technique of a three-dimensional “pointing device” required a “considerable level of skill[]” to operate, and control over a cursor was “quite difficult.” Appx722 1:56-58.

Among the techniques known at the time was the “data glove,” which was worn on the hand and had optical fibers on its surface that

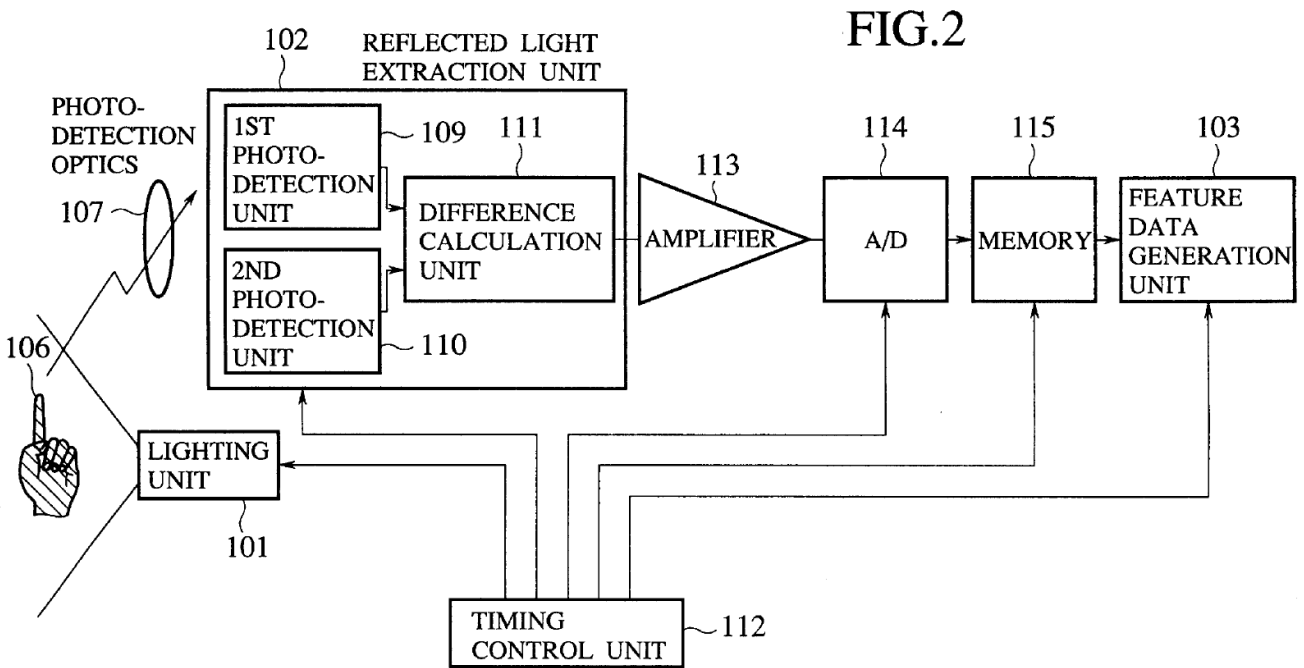
allowed a device to recognize a gesture by measuring the changes in light conduction when a finger is bent. Appx722 2:1-7. Such gloves had been widely expected to become popular after they were initially heralded as the “trigger” for the age of “Virtual Reality.” Appx722 2:43-48. But that popularity never materialized. The data glove was plagued by numerous practical problems and cost issues. For starters, the operator had to wear a glove, which inevitably “obstructed” a hand’s “natural movement.” Appx722 2:30-31. The glove also required “calibrat[ing] the light conduction state ... every time the data glove is worn,” making it “not very convenient.” Appx722 2:31-35.

Recognizing these shortcomings, researchers sought to meet the “demand for a scheme that enables” user input without resort to a wearable device, using instead “natural human communication by inputting manipulation information such as a gesture like a hand action or a body motion and a posture.” Appx722 1:28-32. Such gestures would complement other ways of providing input, such as by “speech,” or through use of a “keyboard” or “mouse.” Appx722 1:32-34. But developing “a technique for extracting a target image from the

background image,” to allow recognition of the “hand alone,” “turned out to be a technically rather difficult thing to do.” Appx722 2:55-59.

Shunichi Numazaki and a team of inventors from Toshiba responded to address that problem. In 1997, the team submitted a patent application that disclosed a method and apparatus for illuminating, and optically detecting, a person’s gestures using “photo-detection units,” and using those gestures to control computer functions. Appx723 4:9-40; Appx726 10:57-66; *see* Appx735 27:41-56; Appx620. That patent, U.S. Patent No. 6,144,366 (Numazaki), issued in November 2000. Appx620.

Figure 2 shows a detailed diagram of an embodiment of Numazaki’s device, which the patent describes as “an information input generation apparatus”:



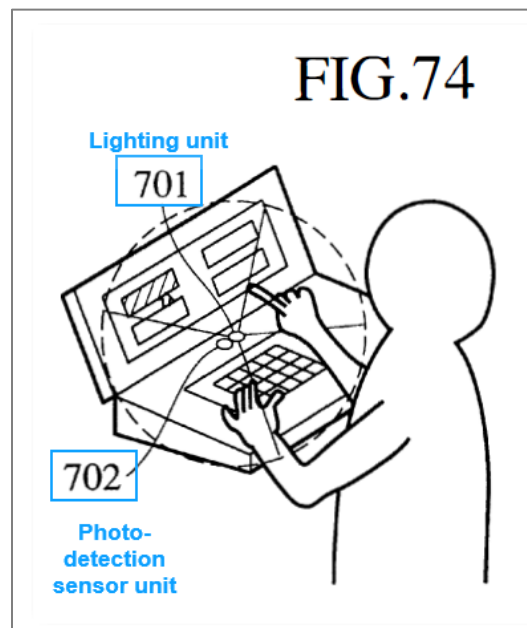
Appx622.

In Figure 2, a timing control unit (element 112) is used to turn on the lighting unit (element 101) to illuminate the target object when the first photo-detection unit (element 109) is active, and to turn the lighting unit off when the second photo-detection unit (element 110) is active. Appx727 11:20-32.

The first photo-detection unit captures an image of the target object illuminated by both natural light and the lighting unit. The second photo-detection unit captures an image of the target object illuminated by only natural light. Appx727 11:33-39. The difference calculation unit (element 111) takes the difference between the two

images, to obtain only the light reflected from the target object resulting from the light emitted by the lighting unit, showing the gesture the system is trying to capture. Appx727 11:43-51; *see also* Appx726 10:40-56. This information is then used by the “feature data generation unit” (element 103) to extract data from the reflected light image to determine the hand movement, which allows the gesture to operate a computer. Appx726 10:57-66.

Figure 74, reproduced below, illustrates a “portable computer” embodiment incorporating the architecture depicted in Figure 2. Appx746 50:25-29.



Appx693 (annotated to show lighting unit and photo-detection sensor unit).

In this system, the portable computer, also described as a “note[book] PC,” comes with a lighting unit (element 701) and a photo-detection sensor unit (element 702). Appx746 50:27-35. The “dashed line circle” serves to indicate the “range of illumination” of the workspace and shows the lighting unit illuminating “the entire hand of the operator.” Appx746 50:35-37.

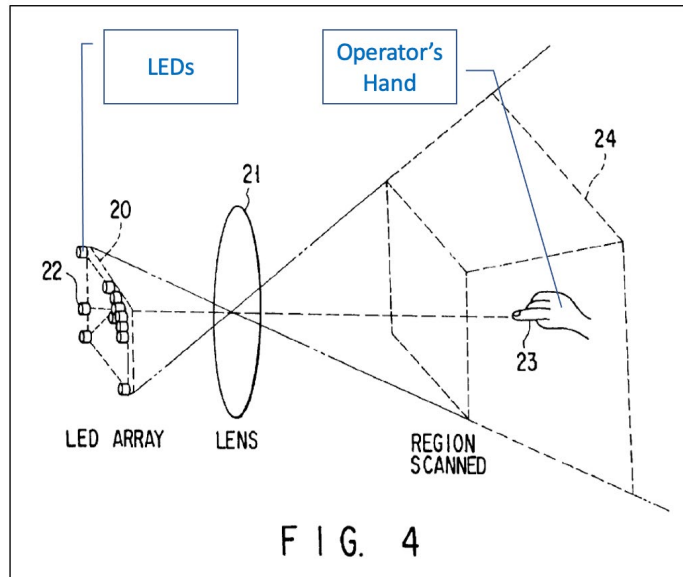
A user “can make the pointing or gesture input by slightly raising and moving the index finger.” Appx746 50:38-40. Numazaki also contemplates combining the gesture with use of a computer keyboard, such as pressing the spacebar to accomplish operations like a “click and drag” on the portable computer. Appx746-747 50:66-51:5.

Numazaki and his team filed a separate patent application in March 1996, U.S. No. Patent 5,900,863 (Numazaki ’863), which issued in May 1999, Appx767, and addressed a related problem regarding portable computers. Appx814 2:34-35. Portable computers, “used in increasing numbers” at the time, required a mouse, a “touch pad,” a “track ball,” or other tactile methods to control the cursor. Appx814 2:35-37. But there were drawbacks with such touch-based methods when it came to a laptop: a mouse was not easily portable, and a touch

pad, while “quite portable,” was “inferior in operability” because a finger could easily touch or leave the track pad, “inevitably making a clicking error.” Appx815 4:3-5, 4:11-14.

Numazaki '863, titled “Method and Apparatus for Controlling Computer Without Touching Input Device,” Appx767, “relates to a device designed to input data for controlling or remote-controlling, for example, an electronic apparatus.” Appx814 1:7-9. It discloses a method and apparatus for “recognizing hand signaling and gestures” to improve upon existing methods providing “input control data” to the portable computer. Appx814 1:12, 1:34. Numazaki '863 identifies several possible embodiments of its “data input device,” which it stated would “enable people to use portable computers at any place with high efficiency.” Appx816 5:57-60; Appx820 14:64-65.

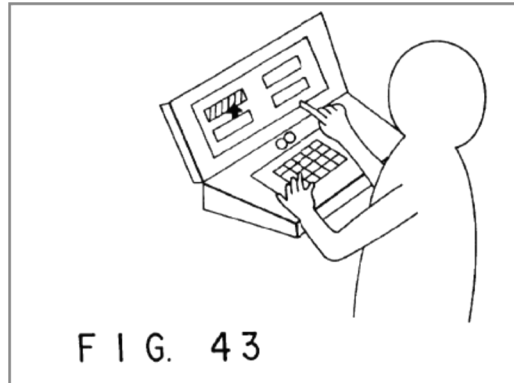
In one embodiment, Numazaki '863 describes the data input device with an array of LED lights, Appx820 14:63-65; Appx821 16:40-42, as shown in Figure 4:



Appx769 (annotated to show plurality of LEDs and user's hand).

In this embodiment, “a plurality of LEDs **22** are arranged in rows and columns ... thus forming a two-dimensional LED array.” Appx821 16:40-42. The light from the LEDs is beamed through the lens (element 21) to the operator's hand (element 23). Appx821 16:42-44. The device can then detect the distance to the hand “with fairly high accuracy,” by having the multiple lights in the LED array light up “sequentially” and generating “distance data” from the light reflected back from the hand. Appx821 16:45-55.

Numazaki '863 also describes incorporating the entirety of the described data input device into a “portable computer,” Appx831 35:12-15; *see* Appx835 44:36-41, as shown in Figure 43:



Appx796.

The device generates data to allow the user to operate the laptop by hand gestures. For example, as the user “moves his finger,” he can “move[] the cursor on the display screen,” point to a menu item, and complete other actions. Appx831 35:20-28; *see also* Appx835 44:36-41.

In 2013, Gesture Technology obtains a patent claiming a method and system for determining a gesture illuminated by the device.

In the late 1990s, Gesture Technology’s founder, Timothy Pryor, was also exploring improvements to technology capable of determining gestures. In November 1998, he filed a provisional patent application, followed by several continuation applications. Appx29. The patent at issue in this case, U.S. Patent No. 8,553,079, issued in October 2013 from a continuation application filed in February 2010. Appx29.¹

¹ For purposes of this proceeding alone, and without forfeiting future challenges, Appellees treat November 9, 1998, as the priority date for the ’079 patent claims. *See* Appx49.

The '079 patent is titled “More Useful Man Machine Interfaces and Applications,” and describes a method and apparatus “for determining a gesture illuminated by a light source,” with “[a] camera ... positioned to observe and determine the gesture.” Appx29. The gesture, in turn, serves as an input for a computer. Appx38 1:54-62. Neither Numazaki nor Numazaki '863 was cited or considered by the examiner during prosecution of the '079 patent. *See* Appx410-619.

Figure 2 of the '079 patent depicts an embodiment in which a computer device—similar to Numazaki’s Figure 74 and Numazaki '863’s Figure 43—includes this method of determining a gesture illuminated by a light source:

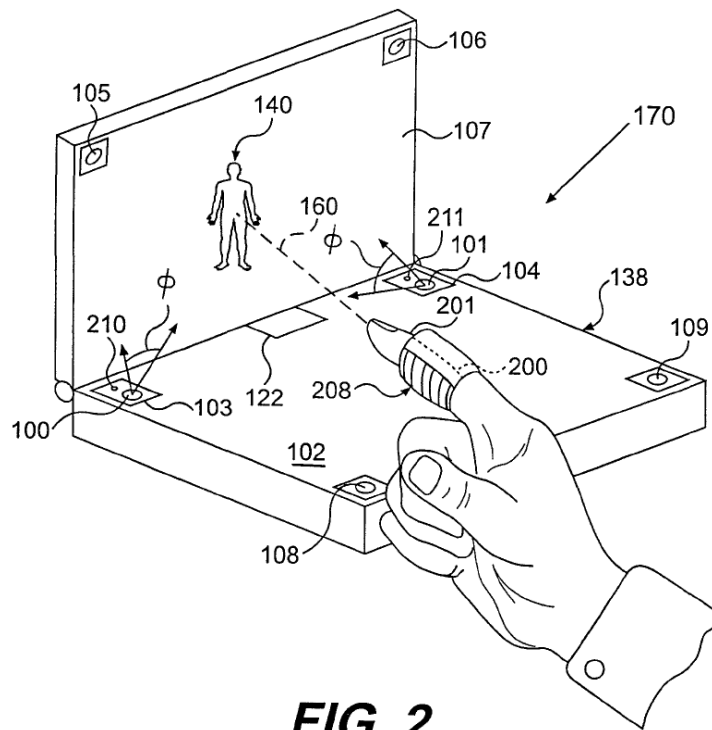


FIG. 2

Appx32.

Figure 2 shows a “laptop” (element 138) with multiple camera locations (elements 100, 101, 105, 106, 108, and 109); a keyboard surface (element 102); a screen (element 107); a light (element 122), light emitting diodes (LEDs, elements 210 and 211), and a work volume area (element 170) within which a user’s movements are detected.

Appx38 2:15-20, 2:39-53, 2:65-66; Appx39 3:1-3, 4:8-14. The system can detect hand gestures, such as “pointing,” “pinching,” and “grip[ping]” movements, by “analyzing sequential image sets” capturing “a sequence of finger movements.” Appx38 2:54-61; Appx39 3:48-51.

The '079 patent identifies several potential applications for this basic arrangement. For example, the patent discusses “Internet and Other Remote Applications,” and describes a user going to a “virtual library” depicting “books on stacks.” Appx42 10:50; Appx43 11:10-12. In this application, the user can “reach and grab” the book, and “[a] picture of the book coming off the shelf is then generated using fast 3D graphical imagery such as the Merlin VR [virtual reality] package available today from Digital Immersion company of Sudbury, Ontario.” Appx43 11:24-28.

Another example provided is a “Baby Learning and Monitoring System.” Appx40 5:22. The patent states that “[t]here are many gestures of babies apparently indicated in child psychology as being quite indicative of various needs, wants, or feelings and emotions, etc. These gestures are typically made with the baby’s hands.” Appx40 5:24-28. For instance, “[t]he baby can signal using agitated movements would often mean [sic] that it’s unhappy.” Appx40 6:37-38. Though “[t]oday” the “[l]earning and [m]onitoring” “is done and learned entirely by the mother being with the baby,” the patent describes the possible application of a “computer [that] could also be used to transmit

information of this sort via the internet email to the mother who could even be at work.” Appx40 5:22, 5:29-30, 6:47-49.

Like Numazaki, the '079 patent specification contemplates using a computer with cameras to determine whether the image of a particular object has moved using “subtraction of successive camera frames.”

Appx39 3:23-27. And like Numazaki '863, the '079 patent specification describes “one or more LEDs” illuminating the gesture. Appx39 4:8-9.

Claims 1, 11, and 21 are independent. Claim 1 is illustrative and recites:

1. A computer implemented method comprising:
providing a light source adapted to direct illumination through
a work volume above the light source;
providing a camera oriented to observe a gesture performed in
the work volume, the camera being fixed relative to the light
source; and
determining, using the camera, the gesture performed in the
work volume and illuminated by the light source.

Appx44 13:1-7.

The Board treated claim 1 as representative, as Gesture Technology accepts. Appx18-19; *see, e.g.*, OB11, 18, 20, 26.

Independent claims 11 and 21 are similar to claim 1, and are directed to

a “computer apparatus” and a “computer implemented method,” respectively. Appx44 13:31-39, 14:14-22.

Claim 3, in turn, depends from claim 1 and adds “wherein the light source includes a plurality of light emitting diodes.” Appx44 13:12-13. Claims 15 and 23 depend from claims 11 and 21, respectively, and add the same limitation to their respective claims. Appx44 14:1-2, 14:25-26; Appx23.

The remaining claims on appeal—claims 2, 4–6, 8–10, 12–14, 19, 22, 24–26, 28, 30—depend from claims already discussed: claims 2, 4-6, 8-9 depend from claim 1; claim 10 depends from claim 9; claims 12-14 and 19 depend from claim 11; claims 22, 24-26, 28, and 30 depend from claim 21. Appx44 13:10-11, 13:14-20, 13:24-30, 13:40-46, 14:10-11, 14:23-24, 14:27-34, 14:38-40, 14:43-45.

Apple petitions for inter partes review, the Board grants LG and Google’s motions for joinder with Apple’s petition, and the Board holds nearly all claims unpatentable.

In February 2021, Gesture Technology sued Apple in the Western District of Texas, alleging that certain functionalities in mobile phone cameras that assist the user in interacting with a smartphone, such as unlocking the phone, infringe the ’079 patent and other patents not at

issue here. The case was later transferred to the Northern District of California.

Apple promptly filed a petition for inter partes review of all claims of the '079 patent. Appx45-126. The Board instituted review and joined petitions filed by LG and Google—co-appellees in this case—with Apple's. Appx1 n.1.

Apple's petition challenged all of the '079 patent claims. As relevant here, Apple demonstrated that most of the claims are obvious over Numazaki in view of the knowledge of a person of ordinary skill, or obvious over Numazaki in view of Numazaki '863 or additional references not challenged here. Appx52-114. Apple supported its petition with a declaration from Dr. Benjamin Bederson, a professor of computer science since 1998. Appx929 ¶ 6. He has worked in the field of human-computer interaction for more than 30 years. Appx930 ¶ 7.

In its Petition, Apple explained that Numazaki discloses the method and apparatus claimed in independent claims 1, 11, and 21 of the '079 patent. Specifically, Numazaki discloses a “method ... for generating information input ... capable of realizing a direct command type information input scheme by which the gesture or the motion can

be inputted easily.” Appx56 (quoting Appx723 4:9-13). Apple showed that Numazaki’s eighth embodiment teaches implementing the method on a laptop, where “the operator operating the keyboard can make the pointing or gesture input by slightly raising and moving the index finger,” as illustrated in Numazaki’s Figure 74. Appx56 (quoting Appx746 50:38-43). Apple further demonstrated that Numazaki discloses a lighting unit used to illuminate a user’s hand or body within a work volume, which Figure 74 depicted with “a dashed line circle indicating [the] range of illumination.” Appx57 (quoting Appx746 50:35-37).

Apple also showed that Numazaki discloses a camera as claimed in claims 1, 11, and 21 of the ’079 patent. As Apple explained, supported by testimony from Dr. Bederson, a person of ordinary skill in the art would have considered Numazaki’s photo-detection units to be cameras. Appx58 n.2. Dr. Bederson explained that each photo-detection unit “performs the basic function of a ‘camera,’ which is to capture image information based on light captured by the sensors’ pixels.” Appx949-950 ¶ 36. Moreover, Numazaki describes using “CMOS sensors” or “CCD ... sensors.” *E.g.*, Appx729 15:24-28. As Dr.

Bederson explained, with citation to the literature on imaging technology contemporaneous with the Numazaki patent, such sensors were among the more common optical sensors used in cameras at the time. Appx949-950 ¶ 36; Appx58 n.2.

Apple further demonstrated that Numazaki '863 discloses using a plurality of LEDs to illuminate the gesture, as claimed in dependent claims 3, 15, and 23 of the '079 patent, and expressly contemplates using this multiple-LED configuration in a portable computer. Appx81-83. Apple explained that a skilled artisan would have been motivated to implement Numazaki '863's multi-LED configuration in Numazaki's portable computer device to improve illumination and accurate detection of the gesture. Appx84-88.

In its response, Gesture Technology argued that Numazaki does not suggest “determining, using the camera, the gesture performed in the work volume and illuminated by the light source.” Appx231-233. Gesture Technology argued that “Numazaki requires two photo-detection units (i.e., two cameras) and Numazaki's lighting unit (i.e., light source) is not active when one of the photodetection units is capturing an image of the gesture.” Appx17-18 (emphasis omitted); *see*

Appx231-232. According to Gesture Technology, because *one* of the photo-detection units in Numazaki captures an image of the gesture with the lighting unit off, even though the other photo-detection unit captures an image with the lighting unit on, Numazaki did not render obvious claim 1's recitation that the gesture be illuminated by the light source while the camera is capturing one or more images of the gesture. Appx231-233.

As to claims 3, 15, and 23, Gesture Technology did not contest that Numazaki '863 teaches using a plurality of LEDs to illuminate a hand gesture and to control a computer using the gesture. Appx24. Nor did Gesture Technology contest Apple's position that a skilled artisan would be motivated to modify Numazaki with Numazaki '863 to provide a more accurate detection of the gesture. Appx24; Appx240-242.

Instead, Gesture Technology argued that a person of ordinary skill in the art would understand claims 3, 15, and 23 to "require[] that the light source illuminates the gesture by having multiple LEDs of the light source emit light at the same time." Appx240; *see* Appx242. It argued that Numazaki '863's plurality of LEDs are sequentially driven, meaning that one LED is on at a time, so did not render obvious claims

3, 15 and 23 under Gesture Technology’s view that the term “multiple LEDs” requires the multiple LEDs to be on simultaneously. Appx241-242.

On the remainder of the dependent claims at issue on appeal, Gesture Technology rested on its response to Apple’s challenges to the independent claims. Appx233; Appx237; Appx239 (discussing dependent claims 2, 4-6, 8-10, 12-14, 19, 22, 24-26, 28, 30).

The Board found most claims of the ’079 patent obvious based on Numazaki in view of the knowledge of a person of ordinary skill, or based on Numazaki in combination with Numazaki ’863, in addition to other references not challenged in this appeal. Appx9-25. Only dependent claims 7, 17, and 27 were not found unpatentable.²

The Board first found that Numazaki disclosed the “providing a camera” method step of independent claim 1, as well as independent claims 11 and 21, which use similar language. Appx16-19. Gesture Technology did not ask for claim construction of “the light source,” but

² Dependent claims 7, 17, and 27 additionally require wearing a “target” like a ring on the operator’s finger. *See* Appx39 4:4-11; Appx44 13:21-23, 14:5-7, 14:35-37. Apple and its co-appellees have not appealed the Board’s decision that these claims are not unpatentable.

argued when applying the term to the prior art that the lighted gesture must remain permanently illuminated. Appx18. The Board rejected that argument, thereby applying the plain and ordinary meaning of “the light source,” without any added limitation that the light source be on at all times. Appx18. The Board reasoned that nothing in the claim language excludes Numazaki’s second photo-detection unit that captures the gesture using natural lighting while one lighting unit (element 101) is off. Appx18.

The Board found that Gesture Technology did not make any separate arguments about the patentability of dependent claims 2, 4-6, 8-10, 12-14, 19, 22, 24-26, 28, and 30. Appx23. Accordingly, the Board found those dependent claims unpatentable over Numazaki as well. Appx23.

The Board also construed “a plurality of light emitting diodes” in dependent claims 3, 15, and 23, to have its plain and ordinary meaning. Appx6-9. The Board rejected Gesture Technology’s alternate construction that would require that the LEDs emit light “at the same time,” because Gesture Technology did not identify anywhere in the claims or specification where the light source was so defined. Appx9.

The Board then found claims 3, 15, and 23, which recite that “the light source includes a plurality of light emitting diodes,” obvious in view of Numazaki and Numazaki ’863. Appx23-24. Gesture Technology argued that this limitation was missing only under its own construction, which would require that the LEDs emit light at the same time. Appx24. Because the Board had already found that construction unsupported by the ordinary meaning of the claims, it rejected Gesture Technology’s arguments and held claims 3, 15, and 23 unpatentable as obvious.

The Board found dependent claims 16, 18, 20, and 29 unpatentable over Numazaki in combination with DeLuca, DeLeeuw, or Maruno. Appx24-25. The Board noted that Gesture Technology failed to separately address these grounds, and agreed with Apple that these claims were unpatentable as obvious. Appx24.³ In total, the Board concluded that claims 1-6, 8-16, 18-26, and 28-30 are unpatentable. Appx27.

³ Nor does Gesture Technology address DeLuca, DeLeeuw, or Maruno on appeal.

The Board also rejected Gesture Technology’s argument that the Patent Office lacked jurisdiction over the patent because the ’079 patent expired in November 2019, before Apple filed its Petition in 2021. The Board explained that inter partes review of patents, including expired patents, fits within the Patent Office’s mandate for “the granting and issuing of patents.” 35 U.S.C. § 2(a)(1); Appx25-27. The Board noted that Gesture Technology failed to explain why the Patent Office’s authority over a patent would end at expiration, even though the rights granted by the patent are not retroactively extinguished. Appx27.

Gesture Technology has appealed from the Board’s decision.

SUMMARY OF ARGUMENT

I. The Board correctly gave “the light source” in independent claims 1, 11, and 21 its plain and ordinary meaning, with no added requirement that the light be on at all times. Gesture Technology never requested claim construction of this term before the Board, making the argument forfeited. Regardless, the claims do not say anything about how long the light must remain on, and thus do not exclude the prior art’s disclosure of capturing gestures illuminated by a light source that turns on and off at different times. § I.A.

The Board’s conclusion that claims 1, 11, and 21 are unpatentable as obvious is supported by substantial evidence. § I.B. The Board correctly found that the prior art discloses the “gesture performed in the work volume and illuminated by the light source” limitation recited in claims 1, 11, and 21. Gesture Technology’s arguments to the contrary rely on the claim construction of “the light source” that the Board correctly rejected. § I.B.1. Nothing in the plain meaning of that term excludes a light source that turns on and off. Moreover, Gesture Technology overlooks the Board’s reasoning that claim 1, which uses the word “comprising,” is open-ended and does not exclude a device like Numazaki’s that has a light source that turns off.

The Board further correctly found that the prior art discloses the “determining, using the camera, the gesture” limitation recited in claim element 1(b). Gesture Technology has the Board’s reasoning exactly backwards when it asserts that the Board misread Numazaki’s disclosure of alternative embodiments. Gesture Technology appears to suggest that the Board erred by incorporating an element of the eighth embodiment into the first, when in fact the Board found that Numazaki discloses incorporating an element of the first embodiment into the

eighth. The Board correctly recognized that Numazaki’s eighth embodiment, describing the invention implemented on a laptop, incorporates the information input generation device described in Numazaki’s first embodiment, which discloses an apparatus capturing images of a gesture illuminated by a light source.

Gesture Technology’s various challenges to the Board’s findings fail to undermine the Board’s finding, based in substantial evidence, that claims 1-2, 4-6, 8-14, 16, 18-22, 24-26, and 28-30 are unpatentable as obvious. § I.B.2.

II. The Board also properly construed the term “plurality of light emitting diodes” in dependent claims 3, 15, and 23 to have its plain and ordinary meaning, with no added limitation requiring that the lights be on at the same time. The plain and ordinary meaning of the term does not say anything about when the lights must be on relative to one another. § II.A. Moreover, the Board correctly found that Numazaki in combination with Numazaki ’863 discloses “a plurality of light emitting diodes used to illuminate an object,” rendering claims 3, 15, and 23 obvious. Gesture Technology does not contest that Numazaki ’863

discloses multiple LEDs, and its argument hinges on its claim construction that all of those lights must be on at the same time. § II.B.

III. The Board had jurisdiction over the '079 patent, which expired prior to institution. This Court has repeatedly addressed Board decisions over expired patents and recognized parties' continued interest in determining the patentability of such patents. Nothing in the statutes governing the scope of and limitations on inter partes review mentions the expiration of a patent as a consideration.

STANDARD OF REVIEW

This Court reviews the Board's claim construction de novo, *AC Techs. S.A. v. Amazon.com, Inc.*, 912 F.3d 1358, 1365 (Fed. Cir. 2019), and the Board's factfinding for substantial evidence, *Monsanto Tech. LLC v. E.I. DuPont de Nemours & Co.*, 878 F.3d 1336, 1341-42 (Fed. Cir. 2018).

Obviousness is a question of law based on underlying factual determinations. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 427 (2007). The underlying factual findings include the "scope and content of the prior art," the "differences between the prior art and the claimed invention," and "the presence or absence of a motivation to combine."

Rembrandt Diagnostics, LP v. Alere, Inc., 76 F.4th 1376, 1382 (Fed. Cir. 2023) (quoting *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1364 (Fed. Cir. 2015)).

Substantial evidence is “such relevant evidence as a reasonable mind might accept as adequate to support a conclusion.” *Incept LLC v. Palette Life Scis., Inc.*, 77 F.4th 1366, 1371 (Fed. Cir. 2023) (quoting *Consol. Edison Co. v. NLRB*, 305 U.S. 197, 229 (1938)). “The possibility of drawing two inconsistent conclusions from the evidence does not prevent the Board’s findings from being supported by substantial evidence.” *Id.* (citing *Consolo v. Fed. Mar. Comm’n*, 383 U.S. 607, 620 (1966)).

ARGUMENT

I. The Board Correctly Found Independent Claims 1, 11, And 21, And Most Of Their Dependent Claims, Unpatentable.

A. The Board correctly applied the plain and ordinary meaning of “the light source” in claims 1, 11, and 21, with no added limitation requiring illumination at all times.

The Board correctly rejected Gesture Technology’s limiting construction of claim 1, which recites in relevant part, “determining, using the camera, the gesture performed in the work volume and illuminated by the light source.” Appx44 13:8-9. Gesture Technology

argues that the claim language requires that “the light source” be on the entire time that the camera is capturing an image used to determine the gesture. OB16-18. Gesture Technology presents this issue on appeal as one of claim construction, perhaps seeking to benefit from a de novo standard of review.

Gesture Technology, however, failed to ask for claim construction of this term before the Board. *See* Appx226; Apx231-232. It therefore has forfeited its challenge to the Board’s construction, and the Board’s factual findings as to the scope and content of the prior art are reviewed for substantial evidence—a standard Gesture Technology makes no effort to meet. *See Conoco, Inc. v. Energy & Env’t Int’l, L.C.*, 460 F.3d 1349, 1358-59 (Fed. Cir. 2006) (“[A] party may not introduce new claim construction arguments on appeal or alter the scope of the claim construction positions it took below.”); *Wallace v. Dep’t of the Air Force*, 879 F.2d 829, 832 (Fed. Cir. 1989) (“Ordinarily, appellate courts refuse to consider issues not raised before an administrative agency.”). Regardless, Gesture Technology’s argument fails under any standard.

The plain language of claim 1 contains no requirement for constant illumination. “[T]he claims define the scope of the right to

exclude; the claim construction inquiry, therefore, begins and ends in all cases with the actual words of the claim.” *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). “[T]he words of a claim ‘are generally given their ordinary and customary meaning.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

As the Board found, the claim requires merely that the gesture be illuminated by the light source at some point in time, not that the gesture remain permanently illuminated. Appx18. The claims themselves contain no limitation regarding the duration or timing of illumination. The plain meaning of “illuminated” would encompass “illuminated” by a flash of light, even though that light isn’t continuous.

Next, Gesture Technology’s claim construction argument as to claim 11 repackages the same argument that the light source must be illuminated at all times, and fares no better. OB18. Claim 11 recites “a processor adapted to determine the gesture ... illuminated by the light source based on the camera output.” Appx44 13:37-39. Claim 11’s mention of “the camera output” changes nothing about whether the

light source must be on at all times, and is consistent with Numazaki's method of determining a gesture by subtracting images of the gesture while the light source is on and off to obtain a more accurate image.

Supra 8-9.

Gesture Technology then argues that the specification has no disclosure of turning off, or strobing, the light source. OB17. This argument again seeks to improperly narrow the plain language of the claims to require “permanent illumination.” *See, e.g., Littelfuse, Inc. v. Mersen USA EP Corp.*, 29 F.4th 1376, 1381 (Fed. Cir. 2022) (“[A]s we have cautioned, courts ordinarily should not limit ‘the claimed invention to preferred embodiments or specific examples in the specification.’”) (quoting *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1328 (Fed. Cir. 2002)); *Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1351-52 (Fed. Cir. 2004) (“Although [patent owner’s argued] features may be desirable, nowhere does the specification indicate that they are necessary”). Here, while the invention does not require turning the light source off and on, nothing in the claims precludes that additional capability so long as the “illumination” requirement is met.

Finding no support in the ordinary meaning of “illuminated by the light source,” Gesture Technology argues that “[i]t would be illogical to illuminate the gesture for some of the images but not others.” OB17-18. It invokes claim 4’s language that “detecting a gesture includes analyzing sequential images of the camera,” OB17 (quoting Appx44 13:14-15); claim 5’s “wherein the detected gesture includes at least ... a pinch gesture,” OB17 (quoting Appx44 13:16-18); and an example describing “detect[ion]” of “sequential image sets such as the motion of the finger, or” a “pinching” gesture, OB17-18 (quoting Appx39 3:48-51). These examples, however, state only that multiple images are captured, and fail to show that constant illumination is required as a matter of grammar or logic. Gesture Technology suggests that turning off the light source while capturing images “would frustrate” the camera’s ability to observe the gesture, because “gestures can only be captured with multiple images because they entail motion.” OB17. But this assertion simply begs the question. Nothing prevents a device from capturing multiple images of a gesture while the lighting unit is turned off and on. Indeed, Numazaki’s device uses that technique to better determine the gesture, by subtracting the two images to isolate the

illuminated gesture. *See* Appx727 11:33-51; Appx1184-1185 ¶¶ 7-8; *see also supra* 8-9. Nothing in the claims or specifications supports the leap that Gesture Technology makes to assert that taking multiple images requires constant illumination.

Nor does expert testimony fill this inferential gap.

Dr. Occhiogrosso’s declaration merely states that a “POSITA would interpret claim element [1(b)] as requiring the gesture *be illuminated* by the light source while the camera is capturing *one* or more images of the gesture,” or “while the gesture is performed,” Appx1384-1385 ¶ 52 (emphasis modified); *see* OB18—but the declaration is silent on the constancy of the illumination. As Apple’s expert explained, Numazaki discloses “a gesture performed in the work volume illuminated by [a] lighting unit.” Appx956-957 ¶ 43. A skilled artisan would have understood Numazaki’s method of illuminating the gesture using “controlled lighting,” and using the image of the unilluminated gesture to “obtain[] an image that focuses on the illuminated object,” to disclose determining a gesture illuminated in the work volume. Appx956 ¶ 42. Illumination is all that is required by the ’079 patent, and that is precisely what Numazaki discloses.

Unable to find any requirement of constant illumination in the claims or specification, Gesture Technology seems to argue that constant illumination across the entire duration of the gesture is somehow inherently required. This argument is contradicted by Numazaki itself, which discloses taking multiple images of a gesture without constant illumination. Numazaki's third embodiment, for instance, describes "recognizing [a] hand action," Appx736 29:6-7, by taking multiple "images of the hand," such as sequentially capturing "two fingers, [a] fist, and five fingers, respectively" as gestures for switching on a TV, and "when these hand [g]estures are made in the reverse order," switching it off. Appx737 31:18-23. A strobing light is no hindrance to taking multiple images and determining a gesture.

In sum, Numazaki, like the '079 patent, describes a method of determining the illuminated gesture, and Numazaki discloses turning the light source on and off, to better isolate just the light reflected from the hand. As such, Gesture Technology's argument fails to explain why the term "illuminated by the light source" should be read to require constant illumination. OB17-18. To the extent this Court even considers this forfeited argument, it should reject Gesture Technology's

construction of “the light source” as unsupported by the claim language or the specification. *Renishaw*, 158 F.3d at 1248.

B. The Board’s determination that claims 1-2, 4-6, 8-14, 16, 18-22, 24-26, and 28-30 are unpatentable as obvious is supported by substantial evidence.

Gesture Technology challenges the Board’s determination that claims 1-2, 4-6, 8-14, 16, 18-22, 24-26 are obvious based on Numazaki in view of the knowledge of a person of ordinary skill. OB18-27.

Obviousness looks to whether “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 103(a) (2006).⁴ In considering a claim of obviousness, therefore, a tribunal must assess the prior art in view of “the background knowledge possessed by a person having ordinary skill in the art.” *KSR*, 550 U.S. at 418.

⁴ Because the ’079 patent application was filed before March 16, 2013, the pre-AIA version of § 103 applies. *See* Appx5 n.3.

1. The Board correctly found that Numazaki discloses the “gesture performed in the work volume and illuminated by the light source.”

The Board correctly determined that Numazaki renders obvious independent claims 1, 11, and 21. Appx16-19. Again, claim 1 is representative, with claims 11 and 21 each reciting a slight variation of limitation 1(b), which requires “determining, using the camera, the gesture performed in the work volume and illuminated by the light source.” Appx44 13:8-9; *see* Appx18-19.

Gesture Technology argues that Numazaki fails to teach this limitation because Numazaki’s lighting unit flashes on and off as the gesture is captured, thereby reiterating its claim construction argument that the light source must be permanently illuminated. OB19. For reasons explained, this Court should affirm the Board’s construction of claim 1. *Supra* § I.A. Because this particular argument hinges on accepting Gesture Technology’s erroneous construction, this Court should reject it for this reason alone.

Even accepting Gesture Technology’s construction, this argument fails. As Gesture Technology does not dispute, one of Numazaki’s photo-detection units captures an image of the gesture when the

lighting unit is on. OB19-20. Gesture Technology’s only quibble is that Numazaki’s second photo-detection unit separately images the gesture when the lighting unit is off. *Id.* Gesture Technology overlooks—and indeed fails to acknowledge in its brief—the Board’s reasoning that claim 1 uses the term “comprising” to create an “open ended” claim and therefore does not preclude Numazaki’s additional teaching of the camera also capturing the gesture when the lighting unit is off.

Appx18.

“Comprising,” as this Court has explained, is a “term of art.” *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997). It means that while “the named elements are essential,” “other elements may be added and still form a construct within the scope of the claim.” *Id.* Because the claim language of the ’079 patent uses “comprising,” the claims encompass the scenario where the light source is on at times and off at other times, just as Numazaki discloses.

Ignoring this basis of the Board’s decision entirely, Gesture Technology asserts that, because Numazaki’s lighting unit does not illuminate the hand gesture “the entire time” that the hand gesture is being performed or detected, Numazaki “contradicts what is required by

claim element 1[b].” OB19-20. But Numazaki does not “contradict[]” limitation 1(b). Numazaki is entirely consistent with limitation 1(b) because it teaches illuminating a hand gesture to capture its performance. Indeed, it discloses a more advanced method of capturing the gesture. Specifically, Numazaki’s two-photo-detection unit structure is designed to more accurately determine an illuminated gesture without constant lighting by the device’s light source. *Supra* 34-35. Numazaki’s photo-detection unit (109) captures an image of the target object illuminated by both natural light and the lighting unit (101), and the second photo-detection unit (110) captures an image of the target object illuminated only by natural light. Appx727 11:33-39. The difference between the two images represents the “reflected light from the object resulting from the light emitted by the lighting unit **101.**” Appx727 11:43-51. Numazaki’s two-sensor structure ensures that the resulting image relays only the illuminated gesture, without extraneous image information. Appx1184 ¶¶ 7-8.

This outcome in Numazaki is precisely the goal of the ’079 patent: determining gestures illuminated by a light source. Just as Numazaki’s second sensor’s detection of the gesture while the lighting unit is off is

not excluded, so is “[t]he fact that Numazaki compares both images in determining the gesture ... not excluded by the claim.” Appx18.

Gesture Technology’s attempt to exclude Numazaki’s more sophisticated approach lacks grounding in the claims or specification.

Because Gesture Technology failed to address the open-ended nature of claim element 1(b)’s “comprising” language in its opening brief—along with the Board’s related finding that Numazaki’s comparison of both images was not excluded by the claim—it has abandoned any challenge to these determinations. *Commc’ns Test Design, Inc. v. Contec, LLC*, 952 F.3d 1356, 1363 n.4 (Fed. Cir. 2020) (“It is well established that an issue not raised by an appellant in its opening brief is waived.”).

Independent claims 11 and 21, in turn, recite limitations similar to limitation 1(b), as Gesture Technology agrees. *See* Appx18-19; OB20. This Court should affirm the Board’s finding of obviousness of claims 1, 11, and 21 as supported by substantial evidence.

2. The Board correctly found that the prior art discloses “determining, using the camera, the gesture.”

Claim 1 recites, in part, “a camera oriented to observe a gesture performed in the work volume” and “determining, *using the camera*, the gesture performed in the work volume.” Appx44 13:2-9 (emphasis added). Gesture Technology disputes the Board’s finding that Numazaki renders obvious a portable device that uses a camera to determine a gesture. OB20-26. But that teaching is the entire point of Numazaki’s invention.

Gesture Technology makes a series of arguments (at 20-26) asserting that the Board wrongly equated certain components in Numazaki’s embodiments with other components in different embodiments. These arguments miss the point. Gesture Technology concedes the Board’s finding that Numazaki’s eighth embodiment (the laptop shown above at 9) incorporates the “information input generation apparatus” described in embodiments one through seven. The logical implications of that incorporation defeat Gesture Technology’s arguments.

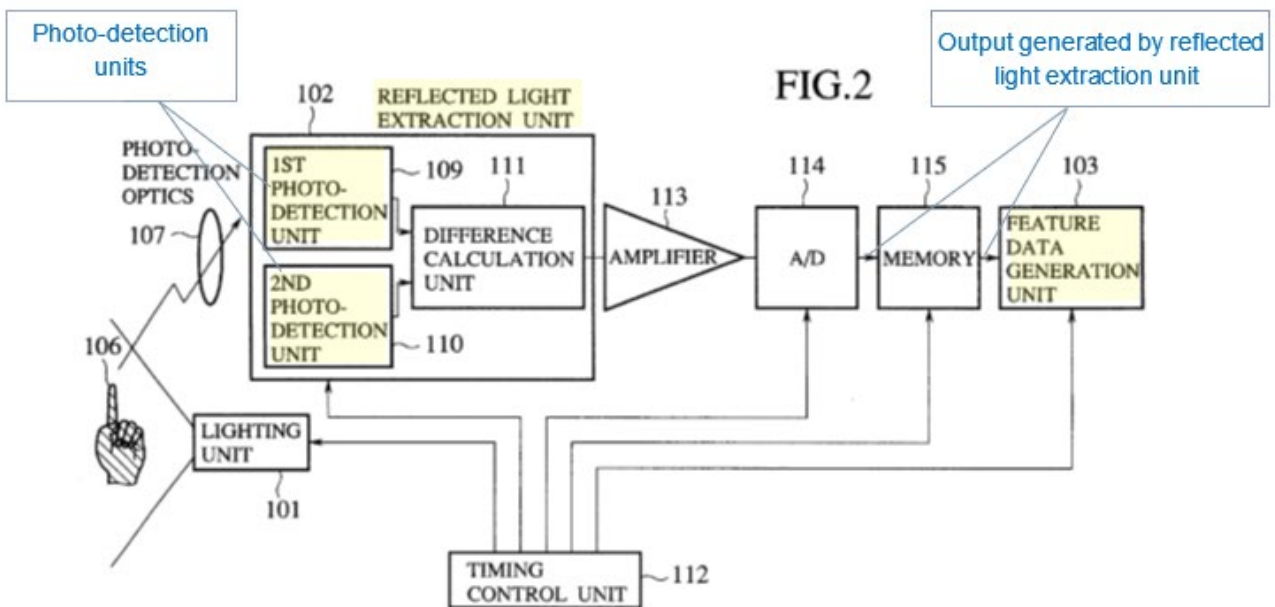
The Board correctly determined that “one of ordinary skill in the art would have understood Numazaki to teach that the ‘photo-detection sensor unit’ in Figure 74 [i.e., the laptop embodiment] is or at least includes a camera, just as Numazaki’s reflected light extraction unit, with its two photo detection units in Figure 2 [i.e., the first embodiment] teach a camera.” Appx15-16. Two undisputed determinations underlie this finding. First, the Board correctly found that the information input generation apparatus of the first embodiment—which Figure 2 depicts—contains a camera. Appx14; Appx727 11:9-11. Gesture Technology does not dispute this. OB22-26; *see* Appx14. The Board then correctly found that the information input generation apparatus of the first embodiment is incorporated into the eighth embodiment. Appx15; *see also* Appx13-15. Gesture Technology also fails to dispute this. OB22. As Apple’s expert explained, a person of ordinary skill would understand Numazaki’s eighth embodiment’s portable device to “incorporate the controlled lighting and two-camera sensor structure described with respect to the first embodiment.” Appx956 ¶ 42; *see* Appx746 50:19-24 (“This eighth embodiment is directed to a system configuration incorporating the information input

generation apparatus of the present invention as described in the above embodiments.”). The eighth embodiment thus discloses portable devices, such as a laptop and keyboard, that implement the earlier described functionalities in the first through seventh embodiments, including those embodiments’ camera and gesture determining capabilities. *See* Appx746-747 50:25-51:5 (Figure 74, laptop); Appx747 51:6-25 (Figure 75, keyboard).

Gesture Technology’s concessions doom its challenges. To begin, Gesture Technology argues that Numazaki does not disclose claim element 1(b)’s “determining, using the camera, the gesture,” Appx44 13:8, because it asserts Numazaki’s “feature data generation unit,” which performs the “determining step,” does not have “access to the image” obtained from the photo-detection sensor unit. OB21-22. Gesture Technology argues, “[f]or example, [that] there is no figure in Numazaki showing the output of Numazaki’s photo-detection sensor unit ... being fed to Numazaki’s feature data generation unit.” OB21 (internal quotation marks omitted).

The depiction of the “output” being fed to the feature data generation unit, and “the relationship ... between Numazaki’s ‘feature

data generation unit' and [its] 'photo-detection sensor unit,'" that Gesture Technology complains is missing is accounted for by the eighth embodiment's incorporation of the earlier embodiments. OB21. Figure 2 depicts the gesture imaged by the photo-detection units that feed their output to the feature data generation unit for the determining step, as shown below. Appx727 11:59-66.



Appx622 (annotated to highlight the photo-detection units, the reflected light extraction unit, the feature data generation unit, and output generated by the reflected light extraction unit).

Figures 74 and 75 show the photo-detection sensor unit in different possible devices—"a computer," and "a keyboard device," respectively:

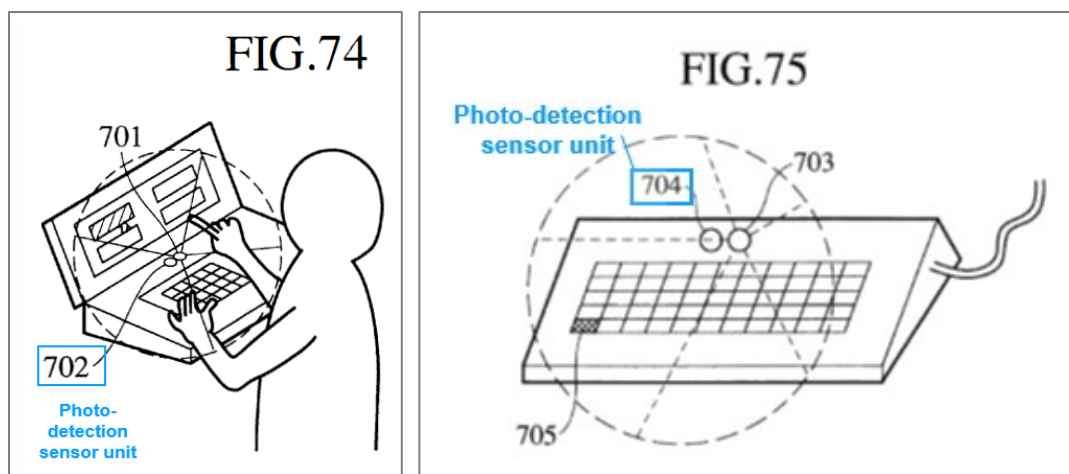


Figure 74, Appx693 (left; annotated to show photo-detection sensor unit); Figure 75 Appx693 (right; annotated to show photo-detection sensor unit).

Figures 74 and 75 depict the eighth embodiment, which is “equipped with the information input generation apparatus of [Numazaki’s] present invention”—that is, the information input generation device depicted in Figure 2, which contains the camera as Gesture Technology concedes. Appx746 50:25-26; Appx747 51:9-10. Gesture Technology’s argument that Numazaki does not disclose the output of the photo-detection sensor unit being fed to the feature data generation unit thus misunderstands Numazaki’s incorporation. The Board’s finding that a person of ordinary skill “would have understood Numazaki to teach ... a camera” that determines a gesture is supported by substantial evidence. Appx16.

Gesture Technology then argues that, because Figure 2’s “photo-detection unit” is not identical in terminology to Figure 74’s “photo-detection *sensor* unit,” one of skill in the art would not understand what a “photo-detection sensor unit” is, or how it relates to the rest of the disclosure. OB22-24. The Board correctly rejected this argument—that the eighth embodiment containing the “photo-detection sensor unit” fails to teach a camera because none of the first seven embodiments use the term “photo-detection sensor unit”—as “inconsistent with the express disclosure of Numazaki.” Appx15. The Board found that Figure 2’s apparatus—including its a reflected light extraction unit, with its two separate photo-detection units—is incorporated into Numazaki’s eighth embodiment. Appx13-16; *see* Appx746 50:19-37.

Gesture Technology’s argument that the Board must have “equate[d]” the photo-detection sensor unit with the photo-detection unit, OB22-23, is therefore directed, wrongly, at incorporation in the other direction. Gesture Technology incorrectly suggests that the Board incorporated an element of the eighth embodiment into the first embodiment. OB22-23. The Board instead read Numazaki’s eighth embodiment as incorporating the first through seventh embodiments.

Appx15 (“Numazaki discloses an eighth embodiment having a number of different portable form factors shown in Figures 74-79, but sharing ‘a system configuration incorporating the information input generation apparatus of the present invention as described in the above embodiments,’ i.e., embodiments 1–7, including Figure 2.”) (quoting Appx746 50:19-20). Gesture Technology gets the Board’s reasoning exactly backwards.

Gesture Technology nevertheless contends that the Board’s obviousness finding must be vacated because Numazaki is “ambigu[ous]” as to whether Figure 74 includes the camera disclosed in Figure 2. OB23. This argument lacks merit. Gesture Technology’s assertion of Numazaki’s purported “ambiguities,” OB23—though there are none—is precisely what the substantial evidence standard resolves in favor of affirmance. Here, there is evidence that “a reasonable mind might accept as adequate to support the Board’s factual findings” on the “scope and content of the prior art” and “the differences between the prior art and the claimed invention.” *Rembrandt Diagnostics*, 76 F.4th at 1382, 1386 (quotation marks omitted). Even if Gesture Technology had offered a competing reasonable interpretation of Numazaki’s

portable device as *not* disclosing a camera, which Gesture Technology fails to muster, the Board was entitled to reject Gesture Technology’s alternative interpretation. *See Shoes by Firebug LLC v. Stride Rite Children’s Grp., LLC*, 962 F.3d 1362, 1371 (Fed. Cir. 2020) (noting that this Court’s “task is not to determine which” of “two alternative theories” about what the prior art discloses “we find more compelling” when reviewing for substantial evidence); *Incept*, 77 F.4th at 1371 (“The possibility of drawing two inconsistent conclusions from the evidence does not prevent the Board’s findings from being supported by substantial evidence.”).

Gesture Technology’s remaining contentions regarding claim 1(b) are similarly unavailing. Gesture Technology appears to suggest (at 23-24) that the “subtraction of the two images”—that is, Numazaki’s method of more accurately capturing a gesture—means that the original image from the photo-detection plane is “never made available” to the feature data generation unit. Gesture Technology reasons that “[t]he only purpose of the subtraction process is to form a *new* image.” OB24 (emphasis added). This is a distinction without a difference. Indeed, the entire point of Numazaki’s invention is to determine a

person's gesture in order to control a computer. Numazaki explains that its device is "directed to an information input scheme," with a light shining "onto a target object" such as a hand, and "the reflected light" from the hand is "captured as an image." Appx726 10:8-13. This discloses "using the camera." Numazaki then discloses the "determining" step, explaining that the device can then "obtain the information regarding a gesture." Appx726 10:62-63. The "feature data extracted from the reflected light image of the hand" can then be used "to operate a computer." Appx726 10:61-66.

Regardless of Numazaki's image-subtraction method, which produces a more refined picture of the gesture by removing extraneous information, Numazaki's device captures an image to determine a gesture. Gesture Technology's argument simply rehashes its earlier contention that Numazaki's image-subtraction method somehow undermines the Board's obviousness finding. *Supra* 34-35. But as explained, the Board's conclusion that Numazaki teaches "determining, using the camera, the gesture" limitation recited in claim 1(b) is supported by substantial evidence.

Gesture Technology also asserts that the Board “equated” Numazaki’s “reflected light extraction unit” in Figure 2 to Numazaki’s “photo-detection sensor unit” in Figure 74, and that the reflected light extraction unit does not teach a camera. OB24-25; *see supra* 45 (annotated Figure 2). Gesture Technology says a device “with a difference calculation unit” that operates like Numazaki’s “reflected light extraction unit” is “not an ordinary camera.” OB25. Gesture Technology appears to be construing “camera” as somehow excluding technical definitions of components like a “difference calculation unit.” OB25 (citing *Phillips*, 415 F.3d at 1312, and arguing for a construction of “camera” based on “ordinary and customary meaning”).

Gesture Technology’s argument misses the mark. The Board properly construed the word “camera” in its ordinary sense, and pointed to the substantial evidence supporting its finding that a skilled artisan would have understood Numazaki to teach that the “photo-detection sensor unit” of Figure 74 is or includes a camera, just as Numazaki’s reflected light extraction unit in Figure 2, with its two photo detection units, teach a camera. Appx15-16. Whether or not a “difference calculation unit” or a “reflected light extraction unit” is “ordinar[ily]”

included in a camera, OB25, is beside the point, because Gesture Technology has failed to attack the central finding that Figure 2 teaches a camera that is incorporated into Figure 74.

Next, Gesture Technology appears to argue that Numazaki does not teach a camera because Numazaki also discloses capturing an image of the gesture while the lighting unit is turned off. OB25-26. This argument repackages Gesture Technology's erroneous claim construction argument already addressed. *Supra* § I.A. As explained, Numazaki's camera determines the gesture based on pictures taken with the light source illuminated and when the light source is not illuminated. Numazaki thus renders obvious claim element 1(b)'s "determining using the camera, the gesture performed in the work volume and illuminated by the light source."

In sum, Gesture Technology adopts a hyper-specific view of the independent claims of the '079 patent that is inconsistent with the actual claim language. Numazaki teaches the whole invention and Gesture Technology has no arguments about motivation to combine, reasonable expectation of success, or secondary considerations. This Court should affirm the Board's conclusion that Numazaki renders

obvious independent claims 1, 11, and 21 as supported by substantial evidence.

Because Gesture Technology raises no additional arguments regarding dependent claims 2, 4-6, 8-10, 12-14, 18-20, 22, 24-26, and 28-30,⁵ this Court should affirm the Board's determination of unpatentability as to those claims as well. *See* Appx23; OB27.

II. The Board Correctly Found Dependent Claims 3, 15, And 23 Unpatentable.

A. The Board correctly construed “plurality of light emitting diodes” to have its ordinary meaning, with no added limitation of simultaneous lighting.

Gesture Technology also tries to improperly narrow additional limitations of the dependent claims. It argues that claims 3, 15, and 23 require “multiple LEDs [to] emit light at the same time.” OB28. The Board correctly rejected this argument. Appx7-9. What claims 3, 15, and 23 actually require is “a plurality of light emitting diodes [LEDs].”

⁵ This includes the Board's finding that dependent claims 16 and 29, 18, and 20 are unpatentable as obvious over Numazaki and DeLuca, Numazaki and DeLeeuw, and Numazaki and Maruno, respectively, Appx24-25. Gesture Technology has forfeited any challenge to this finding by not raising it in its opening brief. *See Contec*, 952 F.3d at 1363 n.4.

Appx44 13:13, 14:2, 14:26. The plain and ordinary meaning of “plurality of light emitting diodes” is simply that—multiple LEDs. Claims 3, 15, and 23 say nothing about the timing of when the LEDs must be on relative to one another.

Gesture Technology’s claimed limitation is not even in the specification. Indeed, its expert conceded that the ’079 patent does not address the timing of multiple LEDs at all. Appx1224 38:3-9 (conceding, “I have not uncovered any reference to timing of LEDs.”). Rather, the specification states the unremarkable proposition that a light source can make a gesturing finger look brighter. OB17 (quoting Appx39 3:1-3). The patent, however, does not disclose how this general teaching—that lighting makes something brighter—extends to requiring that the “plurality of light emitting diodes” be turned on simultaneously.

Finding no support in its claims or specification, Gesture Technology and its expert rely on a misleading modification of the only portion of the specification that they cite in support. They say that the ’079 patent teaches that “[l]ight from below, such as provided by [*the light source*] can be used to illuminate.” OB28 (quoting Appx39 3:1-3)

(emphasis added); *see also* Appx1379 ¶ 41 (quoting Appx39 3:1-3); OB17. But the actual specification language replaced by the bracketed text is “*single* central light **122**.” Appx39 3:1-3 (emphasis added). Accordingly, the specification undermines, not bolsters, the argument that multiple LEDs must be on at the same time.

Even if the specification disclosed the benefit of illuminating multiple LEDs simultaneously, this Court has repeatedly held that limitations should not be imported from the specification. *See, e.g., Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014) (“[W]e do not read limitations from the embodiments in the specification into the claims.” (citing *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 904 (Fed. Cir. 2004))).

Gesture Technology does not argue, much less show, that a skilled artisan would understand the literal words of the claims to require simultaneous illumination. Nor would a departure from the plain and ordinary meaning be warranted. For instance, it is undisputed that there is no lexicography or disavowal. *See* OB27-29. And Gesture Technology has not shown any other basis for departing from the plain meaning of the claim language.

In sum, Gesture Technology gives no legitimate reason to depart from the plain and ordinary meaning of the terms. This Court should affirm the Board's claim construction.

B. The Board's determination that dependent claims 3, 15, and 23 are unpatentable as obvious is supported by substantial evidence.

The Board correctly found that Numazaki in combination with Numazaki '863 discloses a plurality of light emitting diodes used to illuminate an object. Appx23-24; Appx821 16:36-57; Appx769 (Fig. 4). Numazaki '863 teaches a multi-LED array that enables gestures to be more accurately detected by illuminating LEDs at different times. Appx24.

Gesture Technology does not dispute that Numazaki '863 teaches a plurality of light emitting diodes used to illuminate an object. OB30. It argues instead that dependent claim 3, which recites “wherein the light source includes a plurality of light emitting diodes,” requires that the light source illuminate the gesture by having the multiple LEDs of the light source emit light at the same time. OB29-30.

This simultaneous illumination argument rehashes the claim construction argument construing “plurality of light emitting diodes”

addressed above. *Supra* § II.A. As explained, nothing in the claim language requires that the multiple LEDs be illuminated at the same time. This argument fails for the same reason.

Gesture Technology invokes identical grounds in its challenge to dependent claims 15 and 23, which recite limitations similar to dependent claim 3. OB31; Appx23. Its challenge to those claims fails for the same reasons as well. The Board's finding that dependent claims 3, 15, and 23 are unpatentable as obvious over Numazaki and Numazaki '863 should be affirmed.

III. The Board Had Jurisdiction Over The Expired '079 Patent.

Gesture Technology argues the Patent Office lacked jurisdiction over the '079 patent, which expired in November 2019, before Apple filed its Petition in April 2021. OB31-33. This Court has correctly rejected this argument in multiple prior cases. Gesture Technology provides no reason to come to a different conclusion here. Gesture Technology's position is unfounded, in any event, in the statutes and regulations governing inter partes review and this Court's precedents.

Gesture Technology's arguments are incompatible with this Court's precedents. In *Sony Corp. v. Iancu*, this Court reviewed a Board

decision addressing an expired patent, and rejected the contention that the expiration undermined the Federal Circuit’s jurisdiction. 924 F.3d 1235, 1239-41 (Fed. Cir. 2019). The Court explained that “[i]t is well-established” that its decision “would have a consequence on any infringement that occurred during the life” of the patent. *Id.* at 1238 n.1. This would include the fact that “an expired patent may form the basis of an action for past damages.” *Id.* (quoting *Genetics Inst. v. Novartis Vaccines*, 655 F.3d 1291, 1299 (Fed. Cir. 2011)); *see also Keranos, LLC v. Silicon Storage Tech., Inc.*, 797 F.3d 1025, 1033 (Fed. Cir. 2015) (noting that, though “the patentee has fewer rights to transfer when the patent has expired,” the owner of an expired patent can still license the rights or transfer title to an expired patent).

And in directing remand, this Court noted that the Board’s further consideration of the expired patent would likewise have a consequence on any infringement that occurred during the life of the patent. *Sony*, 924 F.3d at 1238 n.1; *see also Wasica Fin. GmbH v. Cont’l Auto. Sys., Inc.*, 853 F.3d 1272, 1279 (Fed. Cir. 2017) (noting that “[t]he Board construes claims of an expired patent in accordance with *Phillips* ...

[and] [u]nder that standard, words of a claim are generally given their ordinary and customary meaning”).

The Supreme Court has likewise recognized that “[i]nter partes review is ‘a second look at an earlier administrative grant of a patent.’” *Oil States Energy Servs., LLC v. Greene’s Energy Grp., LLC*, 138 S. Ct. 1365, 1374 (2018) (quoting *Cuozzo Speed Techs., LLC v. Lee*, 579 U.S. 261, 279 (2016)). Gesture Technology provides no authority explaining why that second look does not apply equally to expired patents. It says that the franchise no longer exists and that the patent owner is limited to suing for damages for past infringement. But such a suit remains an enforcement of the franchise that had been granted, and the act of suing for infringement is an attempt to exercise the exclusionary rights provided by the patent. The inter partes review process directly determines whether the patent owner is allowed to exercise those rights.

Moreover, the statutes that govern inter partes review—including the statutes that establish the scope of inter partes review and limitations on filing—make no mention of a patent’s expiration date as being relevant to the availability of review. Nor do those statutes

expressly limit inter partes review to non-expired patents, despite imposing other limitations. For example, the Patent Office’s mandate for the “granting and issuing of patents” contains no suggestion that its authority ends at the expiration of a patent. 35 U.S.C. § 2(a)(1). 35 U.S.C. § 311(b), in turn, sets forth the scope of inter partes review, and 35 U.S.C. § 311(c), governs the filing deadline for inter partes review, but neither provision mentions the expiration date of the patent as a relevant consideration. Elsewhere, 35 U.S.C. § 315 expressly limits inter partes reviews based on civil actions and the serving of complaints, but it likewise does not mention patent expiration dates.

The Patent Office had jurisdiction to review the expired ’079 patent.

CONCLUSION

This Court should affirm the Board’s decision.

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

This brief complies with the type-volume limitation of Fed. Cir. R. 32(b)(1) because this brief contains 10158 words, excluding the parts of the brief exempted by Fed. Cir. R. 32(b)(2) and Fed. R. App. P. 32(f).

This brief complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and the type style requirements of Fed. R. App. P. 32(a)(6) because this brief has been prepared in a proportionally spaced typeface using Microsoft Word 365 in Century Schoolbook 14-point font.

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